

Issue: Original
Effective Date: March 25, 1999
Expiration Date: September 30, 1999

SOLAR TERRESTRIAL PROBES (STP) PROGRAM

FISCAL YEAR 1999

PROJECT FORMULATION PLAN

For The

MAGNETOSPHERIC MULTISCALE (MMS) MISSION

NASA Goddard Space Flight Center

March 1999

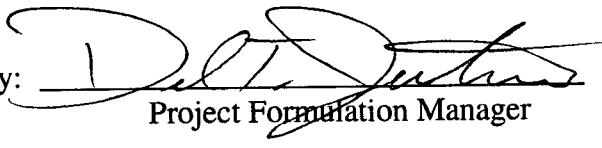
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STP PROGRAM

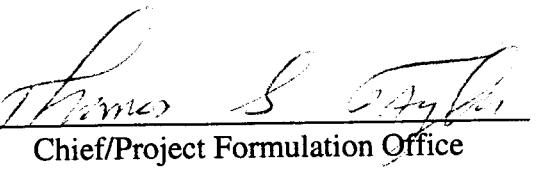
FY 1999 MMS PROJECT FORMULATION PLAN

Prepared by: 
Project Formulation Manager

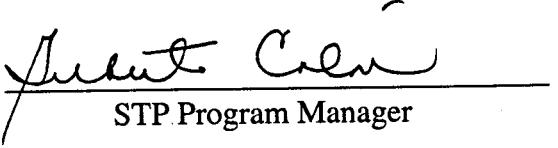
Date: 3/25/99

Concurrence: Paul Camino
Project Formulation Group Leader

Date: 3/25/99

Approved by: 
Chief/Project Formulation Office

Date: 3/28/99

Approved by: 
STP Program Manager

Date: 4/5/99

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FY 1999 MMS PROJECT FORMULATION PLAN

Revision Log

Original Issue Date: March 25, 1999

<u>Rev.</u>	<u>Effective Date</u>	<u>Revision Description</u>	<u>Affected Sec(s)/Page(s)</u>
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<u>Rev.</u>	<u>Effective Date</u>	<u>Revision Description</u>	<u>Affected Sec(s)/Page(s)</u>
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STP PROGRAM**FY 1999 MMS PROJECT FORMULATION PLAN****Table of Contents**

<u>Section</u>	<u>Page</u>
1. Purpose	5
2. Scope	5
3. Applicable Documents	5
4. Roles and Responsibilities	5
5. Program Guidelines and Assumptions	6
5.1 Mission Considerations	6
5.2 Enabling Technologies	6
5.3 Enhancing Technologies	6
5.3.1 Deployable Electric Field Booms	6
5.3.2 Electrically Conductive Solar Arrays	7
5.3.3 Inter-spacecraft Ranging and Alarm System (IRAS)	7
6. FY99 Activities and Deliverables	7
7. Period of Performance	8
8. Reporting	8
9. Change Process	8
10. Acronyms	8
<u>Appendices</u>	10
A. Master Schedule and Critical Milestones	11
B. Project Job Order Numbers	13
C. Skill Categories and Labor Hour Requirements	15
D. Financial Requirements	17

1. Purpose

This Project Formulation Plan (PFP) represents the agreement between the Solar Terrestrial Probes (STP) Program Office and the STAAC Project Formulation Office (PFO) for the work to be performed in support of the Magnetospheric Multiscale (MMS) mission formulation. It defines the requirements and constraints imposed by the STP Program Office and the services and products to be provided by the PFO via its assigned Project Formulation Manager (PFM).

2. Scope

The scope of this document includes the deliverables detailed in Section 6 and all formulation activities defined in 700-PG-7120.6.2, Project Formulation, with specific emphasis on those enabling activities that occur within the stated period of performance. These enabling activities include programmatic planning, concept development, systems analyses and trade studies, and critical technology development.

3. Applicable Documents

The following documents, or latest revision thereto, are applicable to the formulation subprocess and to the execution of this Project Formulation Plan.

A. NASA Documents

- (a) NASA Strategic Management Handbook, Washington, D.C., October, 1996.
- (b) NPD 7120.4A, NASA Program/Project Management, November 14, 1996.
- (c) NPG 7120.5A, NASA Program and Project Management Processes and Requirements, April 3, 1998.

B. GSFC Documents

- (a) GPG 7120.6, Project Management.
- (b) 700-PG-7120.6.2, Project Formulation.
- (c) GPG 1310.1, Establishing Customer Requirements.
- (d) GPG 1440.7, Control of Quality Records.
- (e) GPG 8700.1, Design Planning and Interface Management.
- (f) GPG 8700.2, Design Development.
- (g) GPG 8700.4, Technical Review Program.

4. Roles and Responsibilities

Within the context of this plan, the customer is the STP Program Office; the enabling organization is the PFO; and the provider is the PFM. Each has distinct roles and responsibilities but one common objective—to promote the project in formulation and to move it forward along the path to approval and implementation. The Program Office

provides the guidelines and funding required to execute the formulation of the project in accordance with direction from Enterprise management. The PFO ensures that the PFM has access to those internal services and skills required to meet program requirements and provides insight to the process from its experience base and its relationship with other organizations. The PFM leads the day-to-day activities associated with formulation and utilizes program supplied resources to accomplish the work outlined in this plan in the most efficient and cost-effective manner. The PFM is responsible for developing a cooperative and performance-oriented team to support the Program Office. Frequent communication with the Program Office, both formally and informally, is essential to a successful relationship.

5. Program Guidelines and Assumptions

5.1 Mission Considerations

The objective of this mission is to explore and understand fundamental plasma processes that operate at space plasma boundaries and current sheets. The MMS mission will measure three dimensional (3-D) fields and particle distributions and will measure and discriminate their temporal variations and 3-D spatial gradients, with high resolution, while dwelling in the key magnetospheric boundary regions ranging from the subsolar magnetopause to the distant tail. It will separate spatial and temporal variations over scale lengths appropriate to the processes being studies - connecting the small-scale kinetic regime to the larger-scale regimes appropriate for magnetohydrodynamic calculations.

The MMS mission consists of at least 5 small identical spinning spacecraft, launched simultaneously, that will fly in a double tetrahedral configuration with spacing variable from less than 10 km to several Re. Together, they will traverse through 4 orbit phases with apogees as high as 100 Re.

The instrument complement is expected to measure electric fields, magnetic fields, magnetospheric plasma, and energetic particles.

5.2 Enabling Technologies

The MMS mission does not rely on new technologies.

5.3 Enhancing Technologies

While new technologies are not required to perform the basic mission, there are new technologies that can be adapted to the MMS mission that could significantly increase the mass and power margins. This will translate to additional instrument capability or additional instruments or reduced spacecraft cost.

5.3.1 Deployable Electric Field Booms

The electric field booms are each expected to be at least 6m long. The mass of the booms and deployment mechanisms is significantly larger than that of any of the other

instruments. New booms technologies are available which will lead to lighter, stiffer booms that can substantially reduce the instrument mass.

5.3.2 Electrically Conductive Solar Arrays

Since the MMS spacecraft is measuring the plasma environment it is important that the spacecraft itself does not disturb that environment. Consequently the whole exterior surface of the spacecraft must be electrically conductive. Traditionally, conductive solar arrays have been very expensive. New technologies will reduce the cost of connecting the conductive surfaces of the cover glasses and inter-cover glass spaces.

5.3.3 Inter-spacecraft Ranging and Alarm System (IRAS)

Each of the 5 MMS probe spacecraft will be equipped with an Inter-Satellite Ranging and Alarm System (IRAS) to measure the relative separation between the probes in the tetrahedron and to notify each of the other probes when significant science events or spacecraft anomalies occur. This technology development effort will first determine if existing systems meet IRAS requirements or if these systems can be modified to meet the requirements. Secondly, conceptual designs will be proposed.

6. FY99 Activities and Deliverables

A list of services and products along with their schedule for delivery is given below.

<u>Target Date</u>	<u>Service</u>
2/99	Orbital Sciences Corporation (OSC) Spacecraft Concept Study complete and final report issued
3/99 - 12/99	Refine in-house mission concept in coordination with CAN studies
3/99	IRAS study mid-term presentation by STel
4/99	Release Cooperative Agreement Notice (CAN) study call
5/99	Deployable Boom Study vendor selection
4/99	Support Science and Technology Definition Team (STDT) meeting to evaluate spacecraft concept
5/99	Receive CAN proposals and initiate selection process
5/99	IRAS study final report by STel
6/99	Support last STDT meeting to finalize report
7/99	Release STDT Final Report

- | | |
|------|---|
| 6/99 | Award CAN study contracts (6 month) |
| 6/99 | Conductive solar array development vendor selection |
| 8/99 | Deployable boom study vendor downselect for prototype fabrication |
| 8/99 | CAN studies mid-term presentations |
| 9/99 | Initiate Preparation of Formulation Study NRA |

7. Period of Performance

The period of performance for this agreement is the twelve month period covered by Fiscal Year 1999. This Project Formulation Plan will be reviewed and revised as appropriate in the fourth quarter of each fiscal year to reflect changes in scope, content, schedule, and/or available resources that are to be incorporated into the plan for the following fiscal year.

8. Reporting

In order to provide timely status information to the Program Office and the PFO, written monthly reports shall be submitted that summarize technical and programmatic accomplishments as well as variances between planned and actual resource expenditures. Progress in technology development is an integral part of project formulation and shall also be highlighted. Schedule status shall be presented showing percent of work complete.

Project formulation status shall also be reported to STAAC and invitees via the regularly scheduled Directorate Formulation Review (DFR).

Less formal verbal and electronic communications shall be used frequently to maintain a close working relationship among all team members and are an inherent part of the reporting process.

9. Change Process

Changes to this agreement during the period of performance may be initiated by the STP Program Office or the PFO for good cause. Any change must be submitted in writing for evaluation by all signatories. Approved changes must be noted in the revisions page and the plan appended as required.

10. Acronyms

CAN	Cooperative Agreement Notice
C/PFO	Chief/ Project Formulation Office
DFR	Direktorate Formulation Review

FY	Fiscal Year
GPG	Goddard Procedures and Guidelines
GSFC	Goddard Space Flight Center
IRAS	Inter-spacecraft Ranging and Alarm
m	meters
MMS	Magnetospheric Multiscale
NOA	NASA Obligation Authority
NRA	NASA Research Announcement
NPD	NASA Policy Directive
NPG	NASA Procedures and Guidelines
OSC	Orbital Sciences Corporation
PF/GL	Project Formulation Group Leader
PFM	Project Formulation Manager
PFO	Project Formulation Office
PFP	Project Formulation Plan
PG	Procedures and Guidelines
Re	Earth Radii
STAAC	Systems, Technology, and Advanced Concepts Directorate
STDT	Science Technology Definition Team
Stel	Stanford Telecommunications, Inc.
STP	Solar Terrestrial Probes

Effective Date: March 25, 1999

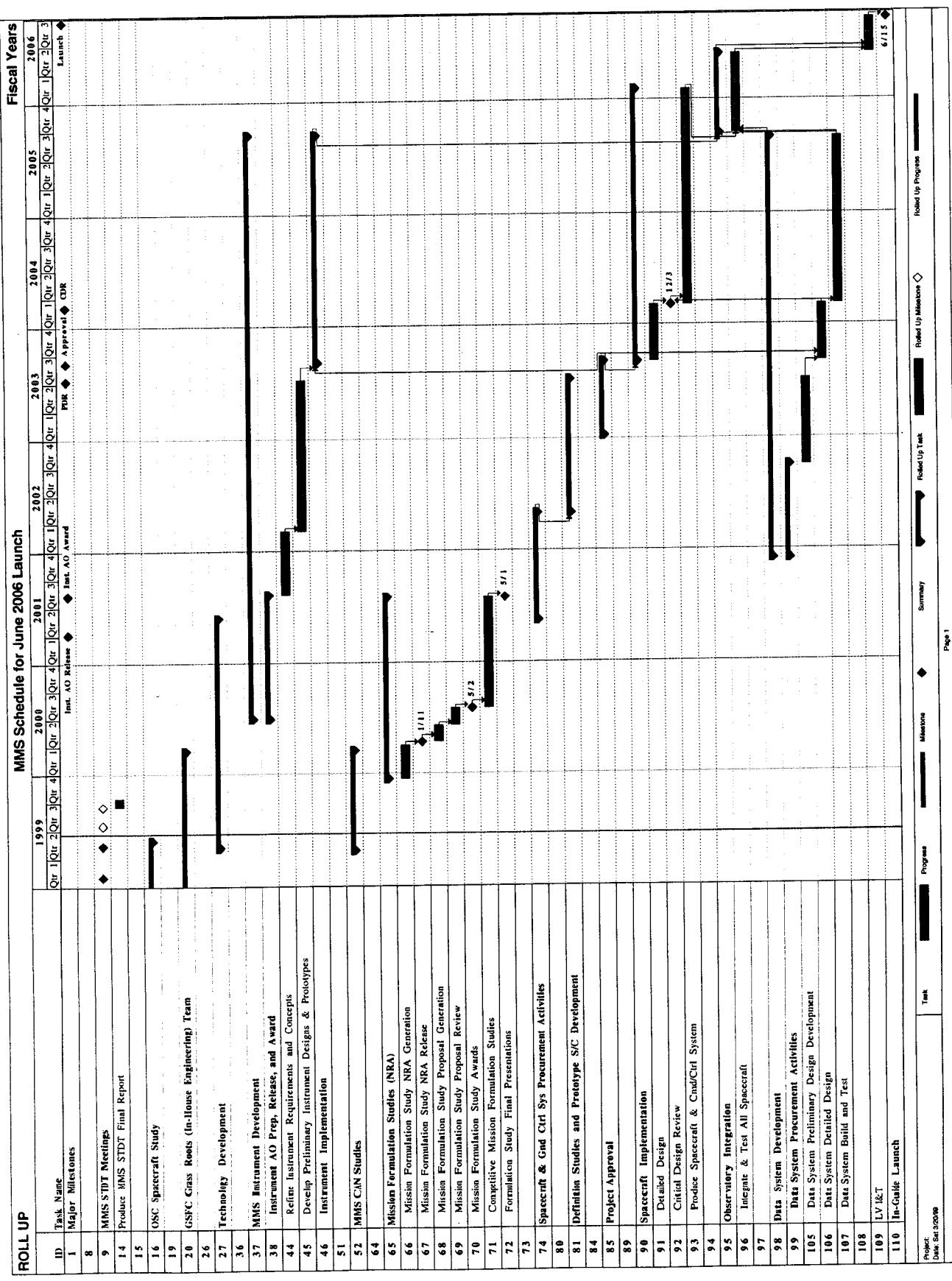
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Appendices

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A. *Master Schedule and Critical Milestones*



Effective Date: March 25, 1999

Expiration Date: September 30, 1999

B. Project Job Order Numbers

Appendix B
Project Job Order Numbers According to WBS

1.0 Mission Management

MPS	158-839-30-20-01
MM Programmatics	740-839-30-20-01
EDU Tech 32666	740-839-30-20-02
Gov. Credit Card	740-839-30-20-04
Education and Outreach	740-839-30-20-41
Printing	740-839-30-20-26
ADP Hardware	740-839-30-20-82

2.0 System Engineering

Radiation Study	562-839-30-22-78
Orbit Analysis	572-839-30-22-78
Small Purchases	740-839-30-22-01
System Engineer	740-839-30-22-97

3.0 Science Support

RS Info Systems	740-839-30-23-02
Science Theory, Modeling , Tools	695-839-30-23-03
Printing -MMS Science	695-839-30-23-26

4.1 Instrument (Formulation)

740-839-30-24-01

4.2 Instrument (Implementation)

410-839-30-24-10

5.1 Spacecraft (Formulation)

Mission Study - CAN	740-839-30-25-06
Mission Study - NRA	740-839-30-25-07
Spacecraft Definition	740-839-30-35-08
OSC S/C Study	740-839-30-25-98

5.2 Spacecraft (Implementation)

410-839-30-25-10

6.0 Mission Ops (Implementation)

410-839-30-26-01

7.0 Mission I&T (Implementation)

410-839-30-27-01

8.0 Launch Vehicle

410-839-30-28-01

9.0 MMS Technology Development

410-839-30-61-01

Effective Date: March 25, 1999

Expiration Date: September 30, 1999

C. Skill Categories and Labor Hour Requirements

Appendix C
Skill Categories and Labor Hour Requirements

Code	Description	99	00	01	02	03	04
180	Mission Integration	0.1	0.1	0.1	0.2	0.2	0.3
217	Procurement	0.0	0.0	0.0	0.0	0.0	0.0
302	System Reliability & Safety Office	0.1	0.1	0.1	0.1	0.3	1.0
303	Assurance Management Office	0.1	0.1	0.1	0.2	0.6	1.0
400.1	STAAC Business Management Office	0.1	0.1	0.1	0.1	0.1	0.1
541	Materials Engineering Branch	0.0	0.1	0.2	0.2	0.2	0.2
542	Mechanical Systems Analysis & Simulation Branch	0.1	0.2	0.2	0.3	0.3	0.5
543	Mechanical Eng. Branch	0.1	0.2	0.2	0.3	0.3	0.3
545	Thermal Engineering Branch	0.2	0.2	0.2	0.3	0.3	0.5
546	Carrier Systems Branch	0.4	0.5	0.0	0.0	0.0	0.0
549	Environmental Test Eng. & Integration Branch	0.2	0.2	0.1	0.2	0.2	0.5
561	Flight Electronics Branch	0.2	0.2	0.2	0.3	0.4	0.5
562	Component Technology & Radiation Effects Branch	0.3	0.2	0.3	0.3	0.2	0.2
563	Power Systems Branch	0.1	0.1	0.1	0.2	0.3	0.3
564	Microelectronics and Signal Processing Branch	0.0	0.1	0.1	0.1	0.1	0.1
567	Microwave Systems Branch	0.8	1.7	1.7	1.7	1.7	1.7
568	Flight Systems Integration And Test Branch	0.0	0.1	0.2	0.2	0.2	0.3
571	GN&C Sys. Engineering Branch	0.2	0.3	1.0	1.2	1.4	1.5
572	Flight Dynamics Analysis Branch	0.2	0.2	0.1	0.1	0.1	0.1
574	Propulsion Branch	0.1	0.1	0.1	0.1	0.2	0.2
581	Systems Integration & Eng. Branch	0.1	0.1	0.1	0.1	0.1	0.2
582	Flight Software Branch	0.0	0.0	0.0	0.0	0.0	0.0
588	Adv. Architectures & Automation	0.0	0.0	0.0	0.0	0.0	0.0
695	Planetary Magnetospheres Branch	1.3	1.2	1.8	1.9	2.3	2.4
696	Electrodynamics Branch	0.0	0.5	0.3	0.6	0.6	1.5
730	Systems Engineering	0.5	0.5	0.5	0.7	0.8	1.0
740	Project Formulation	0.1	0.1	0.2	0.2	0.3	0.3
TOTAL MANPOWER		5.3	7.2	8.0	9.6	11.2	14.7

Effective Date: March 25, 1999

Expiration Date: September 30, 1999

D. Financial Requirements

MMS FISCAL NOA REQUIREMENTS (SUMMARY)
Real Year Dollars

WBS Elements:	JDN	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05
1.0 Mission Management	839-30-20	\$31,000	\$313,000	\$110,000	\$210,000	\$280,000	\$600,000	\$2,350,000	\$3,804,000
2.0 System Engineering	839-30-22	\$2,733	\$183,000	\$120,000	\$170,000	\$300,000	\$300,000	\$300,000	\$1,000,000
3.0 Science Support	839-30-23	\$43,820	\$62,000	\$80,000	\$50,000	\$250,000	\$1,000,000	\$400,000	\$3,000,000
4.1 Instrument (Formulation)	839-30-24-(xx)		\$0	\$0	\$570,000	\$3,400,000	\$3,200,000	\$0	\$0
4.2 Instrument (Implementation)	839-30-24-10		\$0	\$0	\$0	\$0	\$2,000,000	\$11,000,000	\$23,883,780
5.1 Spacecraft (Formulation)	839-30-25-(xx)		\$360,000	\$700,000	\$1,000,000	\$2,700,000	\$3,300,000	\$0	\$0
5.2 Spacecraft (Implementation)	839-30-25-10		\$0	\$0	\$0	\$0	\$2,000,000	\$17,207,826	\$30,000,000
6.0 Mission Ops (Implementation)	839-30-26		\$0	\$0	\$0	\$0	\$2,000,000	\$2,000,000	\$3,000,000
7.0 Mission & T (Implementation)	839-30-27		\$0	\$0	\$0	\$0	\$0	\$0	\$2,000,000
8.0 Launch Vehicle	839-30-28		\$0	\$0	\$0	\$0	\$0	\$18,832,000	\$26,752,000
MISSION TOTALS	\$77,553	\$918,000	\$1,010,000	\$2,000,000	\$7,000,000	\$14,400,000	\$52,289,826	\$93,439,780	
9.0 Technology Development	839-30-61	\$725	\$393,000	\$542,000	\$200,000	\$0	\$0	\$0	\$0

9.0 Technology Development	839-30-61	\$725	\$393,000	\$542,000	\$200,000	\$0	\$0	\$0	\$0
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MMS APPENDIX D
DETAINED FINANCIAL NOA/COST REQUIREMENTS (Real Year Dollars)

				FY 09	C2	C3	C4	C5	C6	C7	FY 08	C2	C3	C4	C5	C6	FY 01	FY 02	FY 03	FY 04	FY 05
1.0 Mission Management	WBS Element	Task No.	ION	\$158-839-30-20-01	\$0	\$38,000	\$214,000	\$0									\$140,000	\$179,000	\$615,000	\$584,000	
MFS MMS			NOA COST	\$0	\$12,000	\$55,000	\$57,000	\$163,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$80,000	\$421,000	\$735,000	\$2,220,000		
MMS Programmatic			NOA COST	\$0	\$0	\$0	\$15,920	\$0	\$20,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$80,000					
EDUTECH			NOA COST	\$0	\$0	\$0	\$0	\$0	\$10,000	\$16,520	\$16,520	\$16,520	\$16,520	\$16,520	\$16,520						
Government Credit Card			NOA COST	\$0	\$0	\$0	\$11,200	\$0									\$30,000	\$30,000			
ADP Equipment			NOA COST	\$0	\$0	\$0	\$1,000	\$0	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000						
Education and Outreach			NOA COST	\$0	\$0	\$0	\$4,000	\$0	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000						
2.0 System Engineering			NOA COST	\$0	\$0	\$0	\$1,000	\$0	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000						
Radiation Study			NOA COST	\$0	\$0	\$0	\$5,000	\$0	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000						
Orbit Analysis			NOA COST	\$0	\$0	\$0	\$9,500	\$0	\$9,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500						
Swallows Sys Eng			NOA COST	\$0	\$0	\$0	\$5,000	\$0	\$5,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000						
3.0 Science Support			NOA COST	\$0	\$0	\$0	\$4,512	\$35,383	\$2,105	\$0	\$90,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$170,000	\$300,000	\$500,000	\$1,000,000	
RS Info Systems (STD1)			NOA COST	\$0	\$0	\$0	\$35,383	\$2,105	\$0	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000						
Science Printing			NOA COST	\$0	\$0	\$0	\$50,000	\$0	\$50,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000						
Science Theory/Modeling/Tools			NOA COST	\$0	\$0	\$0	\$7,000	\$0	\$7,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000						
4.1 Instrument (Formulation)			NOA COST	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
Instrument AO			NOA COST	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
4.2 Instrument Implementation			NOA COST	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
4.1.1 Spacecraft Formulation			NOA COST	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
OSC S/C Study			NOA COST	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
Mission Study - CAN			NOA COST	\$0	\$0	\$0	\$30,000	\$0	\$30,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000						
Mission Study - NRA			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$700,000	\$700,000	\$700,000	\$700,000	\$700,000	\$700,000						
Spacecraft Definition			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000						
5.2 Spacecraft (Implementation)			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000						
5.0 Mission Dev (Implementation)			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000						
5.0 Mission Inv (Implementation)			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000						
5.0 Launch Vehicle			NOA COST	\$0	\$0	\$0	\$110,000	\$0	\$110,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000						
MISSION TOTALS			TOTAL NOA COST	\$93,592	\$204,883	\$594,605	\$121,000	\$24,920	\$121,000	\$756,000	\$93,000	\$40,000	\$2,000,000	\$7,000,000	\$14,400,000	\$52,289,826	\$63,439,780				

D. Jenison 3/25/99

MMS APPENDIX D
DETAILED FINANCIAL NOA/COST REQUIREMENTS (Real Year Dollars)

WBS Element	Task No.	JCN	FY 98	FY 99				FY 00				FY 01				FY 02				FY 03				FY 04			
				C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
9.0 Technology Development	IRAS	839-30-61-01 740-839-30-61-01 NDA C251	\$0	\$60,000 \$12,000	\$40,000 \$51,000	\$0 \$40,000	\$200,000 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	\$0 \$60,000	
Deployable Booms		740-839-30-61-02 NDA C251	\$0	\$96,000 \$0	\$0 \$31,000	\$47,000 \$70,000	\$100,000 \$53,000	\$0 \$50,000	\$0 \$50,000	\$0 \$50,000	\$0 \$50,000	\$0 \$45,000	\$92,000 \$35,000	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0
Conductive Solar Arrays		740-839-30-61-03 NDA C251	\$0	\$150,000 \$0	\$0 \$25,000	\$0 \$0	\$150,000 \$125,000	\$0 \$110,000	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
TECHNOLOGY DEV. TOTALS	TOTAL NOA TOTAL COST		\$0	\$306,000 \$10,000	\$40,000 \$80,000	\$47,000 \$175,000	\$450,000 \$118,000	\$0 \$220,000	\$0 \$105,000	\$0 \$95,000	\$0 \$220,000	\$0 \$0	\$92,000 \$0	\$200,000 \$0	\$0 \$0												

Effective Date: March 25, 1999

Expiration Date: September 30, 1999

**PROJECT FORMULATION
MMS Mission FY99 Monthly Commit/Cost Plan
March 25, 1999**

JDN	Name	FY 99 Allocation	FY 98			FY98 Q1 Totals	FY98 Q2 Totals	FY98 Q3 Totals	FY98 Q4 Totals															
			Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Total	Apr-98	May-98	Jun-98	Total	Jul-98	Aug-98	Sep-98	Total	Oct-98	Nov-98	Dec-98	FY98 Q1 Totals	FY98 Q2 Totals	FY98 Q3 Totals	FY98 Q4 Totals
158-839-30-20-01	WFSI WAS	\$252,000	\$0	\$39,000	\$0	\$3,000	\$0	\$14,000	\$38,000	\$18,000	\$16,000	\$19,000	\$19,000	\$19,000	\$19,000	\$21,000	\$21,000	\$21,000	\$21,000	\$63,000	\$0	\$0	\$0	
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
749-839-30-20-01	Preparations	\$15,920	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-20-02	EDUTECH Admin Assistant	\$28,080	\$28,080	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-20-04	Government Credit Card	\$5,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-20-02	ADP Equipment	\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
562-839-30-22-01	Radiation Study	\$5,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
572-839-30-22-78	Orbit Analysis	\$95,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-22-97	Swath System Enhancer	\$83,000	\$15,171	\$15,171	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	
	Commit		\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171
	Cost		\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171
740-839-30-23-02	RS Info Systems STDTimeline	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-23-26	Science Printing	\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
740-839-30-25-06	Mission Study - CAN	\$300,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Commit		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL		\$918,000																						
Monthly Commitment Totals		\$43,251	\$15,171	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	\$15,170	
Monthly Costing Totals		\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	\$15,171	

Monthly Commitment Totals

Monthly Costing Totals